522 Lecture 7 Mar. 22, 2000

1. Fodor and Kill as "cause to die"

1. Some reasons to believe in syntactic lexical decomposition: pronominal reference to the embedded event:
   a. Floyd melted the glass, which surprised me.
   b. Floyd melted the glass, and I was surprised that he/it would do so.

2. However, with "kill" as "cause to die", such pronominal reference isn't possible.
   a. (overt "cause" morpheme):
   John caused Mary to die, and it surprised me that he/she did so.
   b. ("kill")
   John killed Mary, and it surprised me that he/*she did so.

3. Why should "kill" and "melt" behave differently in this respect?

4. But, even "melt" behaves differently from its clausal paraphrase in some respects:
   a. Floyd caused the glass to melt on Sunday by heating it on Saturday.
   b. Floyd melted the glass on Sunday by heating it on Saturday.
   When the verb is lexical, there is only *one* event. But when you use "cause to X', there are two events, an event of causing and a result event, which may be temporally distinct. Hence "cause to X" is not part of the representation of "melt" (or "kill")

5. "subordinated sentoids" !!

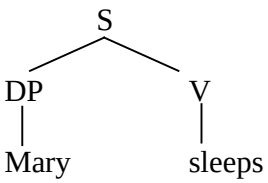
6. Subjects control instrumental adverbials:
   a. John contacted Mary by using the telephone. (John used it, not Mary)
   b. John caused Bill to die by swallowing his tongue. (Bill swallowed Bill's t.)
   c. *John killed Bill by swallowing his tongue. (*Bill swallow Bill's t.)

Hence, causative verbs are not derived by "collapsing" the corresponding causative sentences.

2. Kratzer: CAUSE *must* be an independent predicate from the verb root

1. First: a primer in compositionality

Mary sleeps.



What's the essential meaning of the two elements of the sentence?

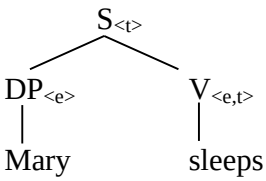
a. "Mary" = the person named Mary

b. "sleeps" = a function which takes an individual as an argument and returns the value "true" if the individual is sleeping.

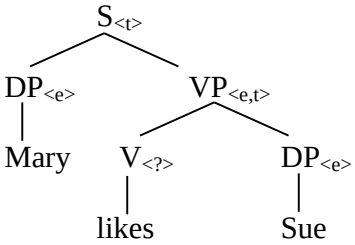
2. Individuals are entities in the real world: we can call them things of type <e>.

Sentences are statements about situations in the real world, which are either true or false: they are of type <t>.

Verbs are functions. Intransitive verbs take an entity as an argument and return a truth value. They are of type <e,t>, where the leftmost member of the pair is the input to the function, and the rightmost member is the output. We can now label our nodes, above, with their types:



3. What about transitive verbs?



Well, looking at the nodes in the tree, we can see that a transitive verb has to be something that takes an entity as input and gives back **another function**, equivalent to an intransitive verb, that takes an entity as input and gives a truth value. So, a transitive verb is of type <e,<e,t>>.

The lexical entry for an intransitive verb will be something like this:

sleep(x) = *true* iff x is asleep

The lexical entry for a transitive verb will be something like this:

like(y)(x) = *true* iff x likes y.

4. Then, the way you interpret a sentence is you just put the arguments together with the verb, one at a time, and see what the truth vale is at the end. So, to interpret "Mary likes Sue":

a. put "Sue" together with "likes"

b. get a function that take an entity x and gives "true" iff x likes Sue.
c. Put "Mary" together with that function ("likes Sue") and get "true" iff Mary likes Sue.

5. Marantz's point about objects and their verbs:
a. throw a baseball
b. throw support behind a candidate
c. throw a boxing match
d. throw a party
e. throw a fit.

Like Jackendoff's point with *keep*, there seem to be lots of different interpretations available for this verb, depending on the characteristics of its object. And this happens for LOTS of verbs: keep, take, kill…

6. Given the view of verbs as functions, how can we implement these different interpretations? Something like this would work:

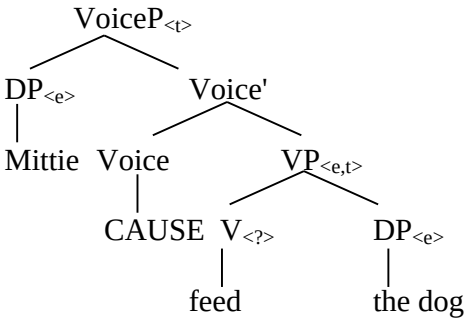
throw(y)(x) = *true* iff x throws y and y is a physical object.
= *true* iff x voluntarily loses y and y is a sporting event.
= *true* iff x hosts y and y is a festive event
etc…

Marantz's point is, these types of idiomatic verbal interpretation *are only conditioned by the internal argument of the verb.* They are *never* triggered by external arguments: you don't ever have a verb "throw" that gets a bunch of different readings depending on whether its **subject** is a sporting event, a party, or a physical object. Only *objects* can trigger these kinds of variation in interpretation.

7. Kratzer: why not? If external arguments are true arguments of their verbs, it would be perfectly easy to imagine a definition like the following:
throw(y)(x) = *true* iff x tramples y and x is a herd animal.
Then, you ought to be able to say, "The cows threw Mary" and mean that they trampled her. But such situations (apparently) never arise in language -- ANY language.

8. Why should this be? Kratzer says, well, the only way this can be true is if the external arguments of verbs in fact AREN'T arguments of verbs -- that is, they're introduced by *some other* predicate, *in the syntax.* That's the only way to ensure that no verb like 7 could ever be represented.

9. Kratzer then presents evidence from Malagasy that external arguments are introduced by a separate morpheme from the main verb, *an-*.
a. She concludes that the separate morpheme introducing external arguments is not a verb itself, but rather a functional projection, VoiceP. For us, it'll be equivalent to CAUSE.
b. The structure for "Mittie fed the dog" then, will be the following:



This way, "Mittie" is not an argument of "feed", but an argument of "cause". The semantic representation of (b) is (c):

c. [Cause(Mittie, event) & Fed(the dog, event)]

which can be read, roughly, as "There was an event that Mittie caused, and it was an event of feeding the dog."

10. Favorable consequences:

a. We ought to be able to operate on a verb *without* VoiceP, e.g., nominalize it, gerundize it, etc. Kratzer provides evidence that this is the case for *of* gerunds:

Maria's reading of *Pride and Predjudice* annoyed us: while Maria *can* be the agent of the reading, she might just be an experiencer of it.

The killing of her cat upset Maria

b. For *non-of* gerunds, she proposes that the whole VoiceP is being gerundized, which is evidenced by the fact that she *must* be the agent:

Maria reading Pride and Predjudice annoyed us.

*The killing her cat upset Maria

Killing her cat upset Maria.

3. Wunderlich 1997

1. A reason not to believe in syntactic lexical decomposition:

Sally persuaded Ted to bomb the Treasury Building on Friday/Tuesday

*She talked to him on Friday, he decided to do it on Tuesday, (and actually carried it out the following Saturday).*cf. Fodor

Solution: requirement that a verb refer to a coherent situation

2. A reason to believe in syntactic lexical decomposition:

He emptied the bottle again.

3. Problems for scopal argument for syntactic lexical decomposition:

a) (CAUSE(BECOME(EMPTY))) predicts 3 scopes for again, not just two.

b) Some adverbials, in combinations with certain verbs, only allow one reading:
He recovered for a short time
He almost recovered. (cf. our discussion of "The door almost opened")
Why are external readings blocked here?

Solution: require adverbs to subcategorize for one or more subtypes of event at event structure.

4. Both these solutions must be implemented at a level of semantic structure, claims Wunderlich. Hence "the proper domain of lexical decomposition is semantics". (This is what everybody we've been reading so far, except H&K, assume)

5. The Proposal
   1. 2-level semantics, along the lines of Bierwisch: SF and CS.
   2. Verbs have more complex SF than nouns.
      CS more or less = to DM "Encyclopedia".
   3. SF is type-categorial, drawing on types <e>, <t> and types formed from those. Composition can then be performed in the standard way, with Functional Application and Functional Composition. (Note: in addition to entities of type <e>, he assumes entities of type <s> as well, standing for "situations", or eventualities)
   4. SF tells you what a possible verb is: there is a finite vocabulary whose composition is regulated by further principles, e.g. Coherence and Connexion.
   5. SF determines argument linking. (everybody assumes this).

6. The meaning of CAUSE:
   Snowing caused a decrease in visibility

   $CAUSE_s$: <s,<s,t>> (That is, it's a predicate that takes a situation as an argument (e.g., "a decrease in visibility") and returns another predicate, which takes another situation as an argument (e.g. "snowing") and, given the values for those two arguments, returns the truth-value "true" just in case the second situation caused the first one.)

7. Resultatives vs. causatives:
   a. He emptied the bottle
   b. He drank the bottle empty.

8. Reasons for assuming these two have significantly different SFs:
   a. Causative verbs derived from adjs. like *empty* never introduce restrictions on *how* the causation happens, that is, they don't refer to the causing situation.
   b. In resultatives, the causing situation is explicitly represented, and the *empty* situation is merely added on. The primitive predicate CAUSE plays no role in the SF of these constructions, merely being the result of an inference made necessary by the rule of Coherence:

9 *Coherence*: A lexical SF conjunction is contemporaneously or causally interpreted

10. a. *to empty:* CAUSE (x, BECOME(EMPTY(y)))(s)
b *drink empty*: [DRINK(x,z) & BECOME(EMPTY(y))](s)

11. p. 36: "Every verb (basic or extended, like a resultative) refers to a coherent situation that has to be individuated in time. A verb either refers to something that happens in a particular time interval or to something connected by a causal chain.

(a) If the verb is represented by a conjunction in SF, the conjoined propositions may be predicated of the same time interval and thus be understood as cotemporaneous, or

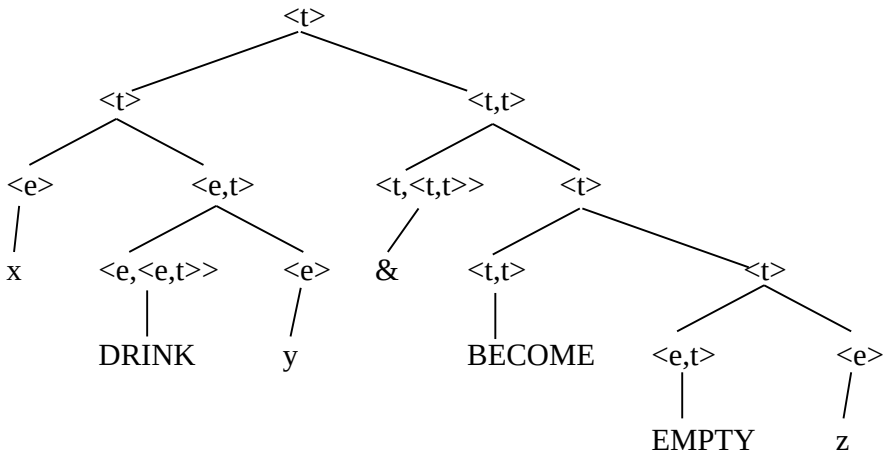
(b) they may be predicated of different time intervals if they are causally related.

The latter option is required whenever the representation contains the predicate BECOME as a conjunct, together with a process predicate. Since the transition expressed by BECOME cannot be cotemporaneous with a process expressed by a predicate like DRINK, a conjunction like that in 10b *must* be interpreted causally, according to 9."

12. 11b? Why the heck can't it be cotemporaneous?
In fact, it seems like it *must* be. John can't drink something on Tuesday and as a result the bottle becomes empty on Wendesday. More on this anon.

13. Note in 10b that "drink" and "empty" have distinct semantic objects. Wunderlich maintains that this is the correct representation, because after all, he's not drinking the *bottle*, but what's *in* the bottle. Also cf. a, b:
a. He drank the wine cellar empty
b. He drank the guests under the table.

14. Consider the SF representation of the resultative (we're just going to ignore the <s> argument of the whole thing):



Wunderlich proposes argument structure linking rules that require that the lowest argument be linked, and that any higher argument that is realized must "L-command" the lowest argument. Above, *y* does not L-command z, so y may not be realized structurally. L-command makes a distinction that some versions of C-command also make, that if the node dominating your mother node is of the same type as your mother node, you get to c-command out of your mother node (like the notion "segment of X"). Thus, x *does* L-command z, and hence gets to be structurally realized.

IMPORTANT TO NOTICE: although it is not syntactically realized, the substance which is drunk IS REPRESENTED at SF -- it's not just an inference that something is drunk, rather, it's a present yet invisible semantic argument.

15. This brings us to why not 12:

Connexion: The second member in a lexical SF conjunction specifies inferences about the first member.

Hence, "From the sentence *He drank the bottle empty* one can infer that it is the ingested substance that is removed from the bottle." (What about "He drank the guests under the table"?)

An underhanded revision of his notion of Coherence, above.
"The crucial assumption is that every ver refers to a coherent situation that has to be individuated in time."

16. The representation of "awake" is (33b):

b. CAUSE(x, BECOME(NON(SLEEP(y)))))

He has alluded to the idea that 3 scopes for "again" aren't possible because of the event-types which it may subcategorize for in SF. He'll have to explain why "again" can't take scope *under* NON, if he's going to include NON in there as an element of SF.

(17. Aside on the notion of negation within lexical items: it's not justified in the case of *awaken*, but it is in many other words. Negative Polarity Items like *a red cent, any* or *ever* need to be c-commanded by negation to appear: "John didn't think you were ever here" vs. "*John thought you were ever here." and "*The man who doesn't like Sue thought you were ever here." BUT, there are verbs which apparently contain negation in them lexically, and this is sufficient to license NPIs: "John denied that you were ever here." However: *awaken* doesn't license an NPI: "*John awakened any boy.")

18. The theory is like LFG and HPSG (and the monostratal syntax assumed by Dowty)

→ syntax is non-transformational.

→ linking from the SF to "Theta-Structure",

→TS is mapped onto a syntax according to language-specific principles. English uses positional linking, German case-based linking, etc. Basically, he's got templates, and slots arguments with particular theta-roles into them.

→ Restricts the potential number of arguments a verb may have using a feature system of Kiparsky's: all arguments are defined by their relations with other TRs: [±h(igher)r(ole), ±l(ower)r(ole)].

→ system can define at most 3 different structural arguments, since any structure with more than 4 arguments will have two that are both [+hr+lr], and hence indistinguishable for linking.

19. Two kinds of operations on structure are possible:

→ adding a "semantic primitive" (e.g. CAUSE in a causative) or a propositional formula (e.g. the result in a resultative) to the SF

→ Manipulating the TS of the verb by blocking certain T-roles: passive, middle, antipassive, reflexive, intransitivization. The argument still is present in SF, and is bound existentially.

20. 2 kinds of causative/inchoative alternations:

a. The ice melts/The sun melted the ice.

b. Sie schliesst die Tür/ Die Tür schliesst sich
she closes the door the door closes SELF

W. proposes that type (a) is a true inchoative, whoseSF doesn't contain CAUSE, while type (b)'s SF always contains CAUSE but the external element undergoes the "reflexive" TS manipulation. For W., these reflexives are "expletives": syntactic place-holders whose semantic arguments are present and existentially bound, giving an interpretation like *They/Someone closed the door*. (Slightly different idea about expletives than usual, N.B, according to which there is crucially NO semantic argument associated with the expletive).

21. All 3-argument (ditransitive) verbs seem to have CAUSE in them. Many do, but there is a class that is represented as an action plus a result: the non-alternating (?) *donate* class.

22. There are verbs which **seem** to have CAUSE in them but in fact do not: this is the class of manner of motion verbs, generally speaking (*push the cart to NY*). He rules out CAUSE in these SFs the same way as for "drink + result" cases above. Any causation involved is implicit, introduced by the Coherence Principle.

23. Similarly, verbs of creation and destruction are represented as having a "hidden object" like the resultatives above:

a. [bake(x) & become(exist(y))]

b. [eat(x) & become(not-exist(y)]

This is kind of neat, actually, expressing the notion that what you *eat* isn't an apple in "Eat an apple" and what you *bake* isn't a cake in "bake a cake", rather it's apple-stuff and potential-cake stuff.